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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/264,577 03/08/99 BORYS

S CASE-NO-1C

EXAMINER

IM22/0613

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ART UNIT

PAPER NUMBER

1742

DATE MAILED:

06/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

| | | | |
|------------------------------|--|------------------------------------|--|
| Office Action Summary | Application No. 09/264,577 | Applicant(s) BORYS ET AL | |
| | Examiner George P Wyszomierski | Art Unit 1742 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 18-21 is/are allowed.
- 6) ☒ Claim(s) 9 and 11-17 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

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1. The following is a quotation of the **appropriate** paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a **printed** publication in this or a foreign country or in public use or on sale in this country, **more than one year** prior to the date of application for patent in the United States.

2. Claims 9, 11, 13, 15, 16, and 17 are **rejected under** 35 U.S.C. 102(b) as being anticipated by Homme '017. Homme discloses **reacting** TiCl_4 vapor with molten sodium to form titanium and NaCl and other products, and **separating the** titanium from the salt and other products. The inert gas of claim 17 is disclosed **at Homme** column 5, line 39. Thus, the Homme disclosure fully meets the limitations **of the process** as defined by the instant claims.

3. Claims 9, 11, and 13-17 are **rejected under** 35 U.S.C. 102(b) as being anticipated by Worthington '931. Worthington similarly discloses **reacting** TiCl_4 vapor with molten sodium to form titanium and reaction products, and **separating the** titanium from the other products. The temperatures disclosed in Worthington are all **considerably** below the sintering temperature of titanium. Thus, Worthington fully discloses **all limitations** of the instant claims.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this **Office action**:

(a) A patent may not be obtained **though the invention** is not identically disclosed or described as set forth in section 102 **of this title**, if the differences between the subject matter sought to be patented and the **prior art** are such that the subject matter as a whole would have been obvious at the **time the invention** was made to a person having ordinary skill in the art to which said **subject matter** pertains. Patentability shall not be negated by the manner in which the **invention** was made.

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5. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Homme.

The Homme patent is described in item no. 2 supra. Homme does not specify that the liquid alkali (sodium) reductant is present in **excess of the stoichiometric amount**, and does not specify a temperature below the sintering temperature. These differences are not seen as resulting in a patentable distinction between **the prior art process** and that of the instant claims because:

a) Homme states that the amount of **titanium metal** formed is preferably equal to the amount consumed from the chloride; thus **one of skill in the art** would conclude that sufficient reductant is present to allow **substantially complete reaction**, i.e. at least a stoichiometric amount, and most likely an amount in **excess of stoichiometric**, of reductant is present. Further, the examiner submits that **one of ordinary skill in the art** would desire an excess amount of sodium in order to insure complete reduction **of the chloride**.

b) The sintering temperature of titanium is **in the range of about 1000 C**, and nothing in the prior art would indicate that such a temperature is ever present in Homme. Indeed, the highest temperature ever disclosed by Homme is **800-850 C**.

Consequently, the Homme disclosure **is held to create a prima facie case of obviousness of the presently claimed invention**.

6. Claim 12 is rejected under 35 U.S.C. **103(a)** as being unpatentable over Worthington. Worthington, described in item no. 3 supra, **does not disclose the excess stoichiometry limitations of claim 12**. However, Worthington **column 3, lines 9-12** indicate that relative portions of the chloride and sodium are not **critical and**, while stating that stoichiometric amounts are most suitable, indicates that an excess of **sodium may be present**. Further, the examiner submits that **one of ordinary skill in the art would desire to have a reactant present in an excess amount in a given chemical reaction in order to insure complete reduction, i.e. to avoid the**

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possibility of an incomplete reaction. Consequently, the Worthington disclosure is held to create a prima facie case of obviousness of the presently claimed invention.

7. In preliminary remarks filed with the **present continuing** application, Applicant alleges that the method by which the chloride vapor is **introduced** into the claimed process is distinct from that used in the applied prior art. Applicant's arguments have been carefully considered, but are not persuasive of patentability because applicant's arguments hinge upon the definition of terms such as "submerged" in liquid metal (**instant claim 9**) or in the "interior" of a stream of liquid metal (**instant claim 13**). The examiner's position is that a single molecule of vapor located within the area encompassed by the liquid metal in the prior art fully meets the limitations of the claims as presented.

8. Elliott (U.S. Patent 6,210,461), cited on the enclosed PTO-892 form, is of interest. The examiner notes that the filing date of the Elliott patent was subsequent to the effective filing date of the present application.

9. Claims 1-8 and 18-21 are allowable over the prior art of record, and claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (703) 308-2531. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax number for this Group is (703) 305-7719. The Right fax number for this examiner is (703) 872-9039. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.



GEORGE WYSZOMIERSKI
PRIMARY EXAMINER

GPW

June 11, 2001